

1 We claim:

1 1. A method to provide selectable redundant accessor availability in a data
2 storage and retrieval system, comprising the steps of:

3 providing a data storage and retrieval system comprising one or more data storage
4 devices and an accessor, wherein said accessor comprises a first gripper and a second
5 gripper;

6 operating said first gripper;

7 requesting use of said second gripper;

8 determining if use of said second gripper is authorized;

9 if use of said second gripper is authorized, operating said second gripper.

1 2. The method of claim 1, further comprising the following steps:

2 providing a software key;

3 providing said software key to said data storage and retrieval system to authorize
4 the use of said second gripper.

1 3. A method to provide selectable redundant accessor availability in a data
2 storage and retrieval system, comprising the steps of:

3 providing a data storage and retrieval system comprising one or more data storage
4 devices, a first accessor, and a second accessor;

5 operating said first accessor but not said second accessor;

6 requesting use of said second accessor;

7 determining if use of said second accessor is authorized;

8 if use of said second accessor is authorized, operating said second accessor.

1 4. The method of claim 3, wherein said data storage and retrieval system
2 further comprises at least one of software and firmware to operate said first accessor and
3 said second accessor.

1 5. The method of claim 3, further comprising the following steps:
2 providing a software key;
3 providing said software key to said data storage and retrieval system to authorize
4 the use of said second accessor.

1 6. The method of claim 3, wherein said requesting step comprises requesting
2 use of said second accessor for cold-standby availability, and wherein said determining
3 step comprises determining if use of said second accessor is authorized for cold-standby
4 availability, and wherein said operating step comprises operating said second accessor for
5 cold-standby availability if use of said second accessor is authorized for cold-standby
6 availability.

1 7. The method of claim 6, further comprising the following steps:
2 providing a software key;
3 providing said software key to said data storage and retrieval system to authorize
4 the use of said second accessor for cold-standby availability;

1 8. The method of claim 3, wherein said requesting step comprises requesting
2 use of said second accessor for hot-standby availability, and wherein said determining
3 step comprises determining if use of said second accessor is authorized for hot-standby
4 availability, and wherein said operating step comprises operating said second accessor for

5 hot-standby availability if use of said second accessor is authorized for hot-standby
6 availability.

1 9. The method of claim 8, further comprising the steps of:
2 monitoring the operation of said first accessor;
3 if a failure of said first accessor is detected, operating said second accessor.

1 10. The method of claim 8, further comprising the following steps:
2 providing a software key;
3 providing said software key to said data storage and retrieval system to authorize
4 the use of said second accessor for hot-standby availability.

1 11. The method of claim 3, wherein said requesting step comprises requesting
2 use of said second accessor for dual-active accessor availability, and wherein said
3 determining step comprises determining if use of said second accessor is authorized for
4 dual-active accessor availability, and wherein said operating step comprises operating
5 said second accessor and said first accessor simultaneously if use of said second accessor
6 is authorized for dual-active accessor availability.

1 12. The method of claim 11, further comprising the following steps:
2 providing a software key;
3 providing said software key to said data storage and retrieval system to authorize
4 the use of said second accessor and said first accessor simultaneously.

1 13. An article of manufacture comprising one or more data storage devices
2 and an accessor comprising a first gripper and a second gripper, and a computer useable
3 medium having computer readable program code disposed therein to provide selectable

4 redundant accessor availability, the computer readable program code comprising a series
5 of computer readable program steps to effect:

6 operating said first gripper;
7 receiving a request to use said second gripper;
8 determining if use of said second gripper is authorized;
9 if use of said second gripper is authorized, operating said second gripper.

1 14. The article of manufacture of claim 13, said computer readable program
2 code further comprising a series of computer readable program steps to effect receiving a
3 software key authorizing use of said second gripper.

1 15. An article of manufacture comprising one or more data storage devices, a
2 first accessor, a second accessor, and a computer useable medium having computer
3 readable program code disposed therein to provide selectable redundant accessor
4 availability, the computer readable program code comprising a series of computer
5 readable program steps to effect:

6 operating said first accessor but not said second accessor;
7 receiving a request to use said second accessor;
8 determining if use of said second accessor is authorized;
9 if use of said second accessor is authorized, operating said second accessor.

1 16. The article of manufacture of claim 15 further comprising at least one of
2 software and firmware to operate said first accessor and said second accessor.

1 17. The article of manufacture of claim 15, said computer readable program
2 code further comprising a series of computer readable program steps to effect receiving a
3 software key to authorize use of said second accessor.

1 18. The article of manufacture of claim 15, wherein said computer readable
2 program code to receive a request to use said second accessor comprises a series of
3 computer readable program steps to receive a request for cold-standby availability for
4 said second accessor, and wherein said computer readable program code to determine if
5 use of said second accessor is authorized comprises a series of computer readable
6 program steps to determine if use of said second accessor is authorized for cold-standby
7 availability, and wherein said computer readable program code to operate said second
8 accessor comprises a series of computer readable program steps to operate said second
9 accessor for cold-standby availability if use of said second accessor is authorized for
10 cold-standby availability.

1 19. The article of manufacture of claim 18, said computer readable program
2 code further comprising a series of computer readable program steps to effect receiving a
3 software key to authorize use of said second accessor for cold-standby availability.

1 20. The article of manufacture of claim 15, wherein said computer readable
2 program code to receive a request to use said second accessor comprises a series of
3 computer readable program steps to receive a request for hot-standby availability for said
4 second accessor, and wherein said computer readable program code to determine if use of
5 said second accessor is authorized comprises a series of computer readable program steps
6 to determine if use of said second accessor is authorized for hot-standby availability, and

7 wherein said computer readable program code to operate said second accessor comprises
8 a series of computer readable program steps to operate said second accessor for hot-
9 standby availability if use of said second accessor is authorized for hot-standby
10 availability.

1 21. The article of manufacture of claim 20, said computer readable program
2 code further comprising a series of computer readable program steps to effect:

3 monitoring the operation of said first accessor;

4 if a failure of said first accessor is detected, operating said second accessor.

1 22. The article of manufacture of claim 20, said computer readable program
2 code further comprising a series of computer readable program steps to effect receiving a
3 software key authorizing use of said second accessor for hot-standby availability.

1 23. The article of manufacture of claim 15, wherein said computer readable
2 program code to receive a request to use said second accessor comprises a series of
3 computer readable program steps to receive a request for dual-active accessor
4 availability, and wherein said computer readable program code to determine if use of said
5 second accessor is authorized comprises a series of computer readable program steps to
6 determine if dual-active accessor availability is authorized, and wherein said computer
7 readable program code to operate said second accessor comprises a series of computer
8 readable program steps to simultaneously operate said first accessor and said second
9 accessor if dual-active accessor availability is authorized.

1 24. The article of manufacture of claim 23, said computer readable program
2 code further comprising a series of computer readable program steps to effect receiving a
3 software key authorizing dual-active accessor availability.

1 25. A computer program product usable with a programmable computer
2 processor having computer readable program code embodied therein to provide selectable
3 redundant accessor availability in a data storage and retrieval system comprising one or
4 more data storage devices and an accessor, wherein said accessor comprises a first
5 gripper and a second gripper, comprising:

6 computer readable program code which causes said programmable computer
7 processor to operate said first gripper;

8 computer readable program code which causes said programmable computer
9 processor to receive a request to use said second gripper;

10 computer readable program code which causes said programmable computer
11 processor to determine if use of said second gripper is authorized;

12 computer readable program code which, if use of said second gripper is
13 authorized, causes said programmable computer processor to operate said second gripper.

1 26. The computer program product of claim 25, further comprising computer
2 readable program code which causes said programmable computer processor to receive a
3 software key authorizing use of said first gripper and said second gripper.

1 27. A computer program product usable with a usable with a programmable
2 computer processor having computer readable program code embodied therein to provide
3 selectable redundant accessor availability in a data storage and retrieval system

4 comprising one or more data storage devices, a first accessor, and a second accessor,
5 comprising:

6 computer readable program code which causes said programmable computer
7 processor to operate said first accessor but not said second accessor;

8 computer readable program code which causes said programmable computer
9 processor to receive a request to use said second accessor;

10 computer readable program code which causes said programmable computer
11 processor to determine if use of said second accessor is authorized;

12 computer readable program code which, if use of said second accessor is
13 authorized, causes said programmable computer processor to operate said second
14 accessor.

1 28. The computer program product of claim 27, wherein said data storage and
2 retrieval system further comprises at least one of software and firmware to operate said
3 first accessor and said second accessor.

1 29. The computer program product of claim 27, further comprising computer
2 readable program code which causes said programmable computer processor to receive a
3 software key authorizing use of said second accessor.

1 30. The computer program product of claim 27, wherein said computer
2 readable program code to receive a request to use said second accessor comprises
3 computer readable program code which causes said programmable computer processor to
4 receive a request for cold-standby availability for said second accessor, and wherein said
5 computer readable program code to determine if use of said second accessor is authorized

6 comprises computer readable program code which causes said programmable computer
7 processor to determine if cold-standby availability for said second accessor is authorized,
8 and wherein said computer readable program code to operate said second accessor
9 comprises computer readable program code which, if cold-standby availability for said
10 second accessor is authorized, causes said programmable computer processor to operate
11 said second accessor for cold-standby availability.

1 31. The computer program product of claim 30, further comprising computer
2 readable program code which causes said programmable computer processor to receive a
3 software key authorizing use of said second accessor for cold-standby availability.

1 32. The computer program product of claim 27, wherein said computer
2 readable program code to receive a request to use said second accessor comprises
3 computer readable program code which causes said programmable computer processor to
4 receive a request for hot-standby availability for said second accessor, and wherein said
5 computer readable program code to determine if use of said second accessor is authorized
6 comprises computer readable program code which causes said programmable computer
7 processor to determine if hot-standby availability for said second accessor is authorized,
8 and wherein said computer readable program code to operate said second accessor
9 comprises computer readable program code which, if hot-standby availability for said
10 second accessor is authorized, causes said programmable computer processor to operate
11 said second accessor for hot-standby availability.

1 33. The computer program product of claim 32, further comprising:

2 computer readable program code which, if hot-standby availability for said
3 second accessor is authorized, causes said programmable computer processor to monitor
4 the operation of said first accessor;

5 computer readable program code which, if a failure of said first accessor is
6 detected, causes said programmable computer processor to operate said second accessor.

1 34. The computer program product of claim 32, further comprising computer
2 readable program code which causes said programmable computer processor to receive a
3 software key authorizing use of said second accessor for hot-standby availability.

1 35. The computer program product of claim 27, wherein said computer
2 readable program code to receive a request to use said second accessor comprises
3 computer readable program code which causes said programmable computer processor to
4 receive a request for dual-active accessor availability, and wherein said computer
5 readable program code to determine if use of said second accessor is authorized
6 comprises computer readable program code which causes said programmable computer
7 processor to determine if dual-active accessor availability is authorized, and wherein said
8 computer readable program code to operate said second accessor comprises computer
9 readable program code which, if dual-active accessor availability is authorized, causes
10 said programmable computer processor to simultaneously operate said first accessor and
11 said second accessor.

1 36. The computer program product of claim 35, further comprising computer
2 readable program code which causes said programmable computer processor to receive a

- 3 software key authorizing simultaneous operation of said first accessor and said second
- 4 accessor.